BC HYDRO GREENHOUSE GAS REPORT
JUNE 2001

THE POWER IS YOURS

BC hydro

105-06236/

Table of Contents

Profile of BC Hydro	1
2000 at a glance	2
Message from the President & CEO	3
Managing greenhouse gases	4
Our GHG emissions	6
Stretching our resources	8
Helping customers save energy	9
Choosing cleaner power	10
GHG emission offsets	11
Policy development	12
Communicating about climate change	13
Understanding our greenhouse gas inventory	15
Greenhouse gas inventory (1989-2005)	19
Glossary	20

BC Hydro's position on Climate Change

BC Hydro believes taking action now to address climate change is the right thing to do for people, the planet and our economy. We are committed to reduce the growth of our GHG emissions and to support and work with others who are also taking action on climate change.

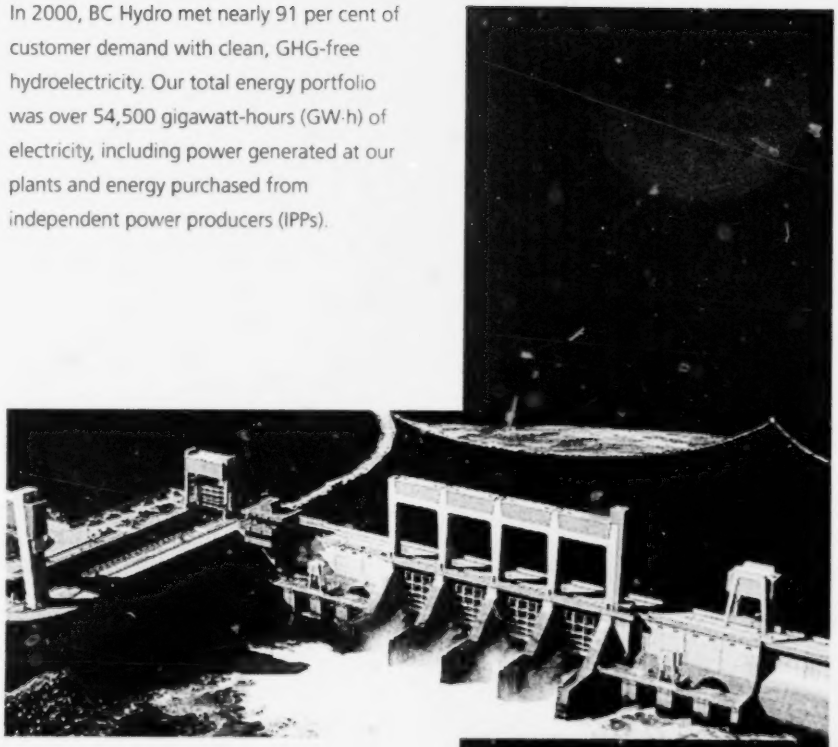
Profile of BC Hydro

BC Hydro is among North America's leading providers of clean, GHG-free hydro power.

We are a vertically-integrated company with significant generation, transmission and distribution assets valued at more than $9 billion. We have more than 1.5 million customers in British Columbia and a skilled workforce of approximately 5,900 employees.

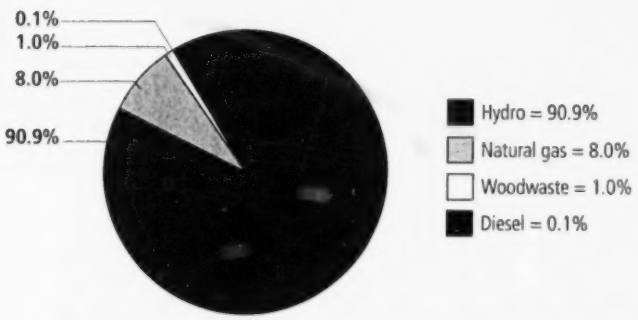
The third largest electrical utility in Canada, BC Hydro generates electricity at 30 hydroelectricity installations. We also operate three thermal generating plants to augment hydroelectricity production, plus a small number of diesel-generating stations to provide local power in remote areas of B.C.

In 2000, BC Hydro met nearly 91 per cent of customer demand with clean, GHG-free hydroelectricity. Our total energy portfolio was over 54,500 gigawatt-hours (GW·h) of electricity, including power generated at our plants and energy purchased from independent power producers (IPPs).



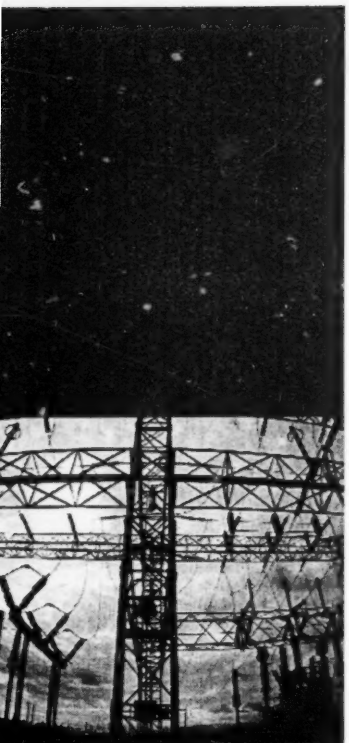
BC Hydro is the third largest electrical utility in Canada and supplies power to more than 1.5 million customers in British Columbia.

BC Hydro system power supply (2000)



In 2000, nearly 91 per cent of the power generated by BC Hydro was clean, GHG-free hydroelectricity.

2000 at a glance



Exports from BC Hydro's hydroelectric power system displaced thermally generated power in Alberta and the western U.S., thereby reducing GHG emissions.

Greenhouse gas emissions higher this year

As anticipated, BC Hydro's total GHG emissions were higher between January and December 2000 than in 1999. The increase reflects greater contributions from thermal generating sources to meet growing customer demand for electricity.

Our GHG emissions totalled 2.3 million tonnes of carbon dioxide equivalent (CO_2e)* in 2000, up 63 per cent from 1999.

Emissions from our own power generation activity totalled 1.9 million tonnes while emissions from independent power producers who sell power to BC Hydro were 282,000 tonnes.

Other GHG emissions from our operations, such as motor vehicle use, space heating at office buildings, and SF_6 losses from transmission equipment, totalled 116,000 tonnes.

Internal emissions reduction successes

Customer efficiencies—Energy-efficiency programs promoted by Power Smart achieved 2,300 GW·h in annual energy savings, equivalent to 1.2 million tonnes in avoided GHG emissions.

Internal efficiencies—BC Hydro gained nearly 580 GW·h of GHG-free energy from continuing efficiency improvements at our hydroelectric facilities, contributing to 307,000 tonnes avoided GHG emissions, plus 9,500 tonnes avoided GHG emissions from ongoing upgrades at Burrard Generating Station.

Cleaner power—We avoided 1.2 million tonnes of GHG emissions through purchases from B.C. independent power producers (IPPs), including small hydro operators, woodwaste facilities and high-efficiency natural gas generation plants.

Offset activities

Purchasing emission reductions—In 2000, we pledged that the increase in GHG emissions at two new gas-fired generation facilities on Vancouver Island will be offset by 50 per cent through to 2010. The commitment means we will contract 5.5 million tonnes of GHG offsets to compensate for GHG emissions at the Island Cogeneration Project in Campbell River, and the Port Alberni Generation Project in Port Alberni.

Exporting cleaner power—Exports from our hydroelectric power system displaced thermally generated power in Alberta and the western U.S., thereby reducing GHG emissions.

Sequestering carbon—Carbon is being captured and stored by wetlands we are creating at our Upper Arrow Reservoir near Revelstoke.

**All GHG volumes are in CO_2e unless otherwise noted (see glossary on page 20).*

Message from the President & CEO

I am pleased to submit BC Hydro's fifth annual report to Voluntary Challenge and Registry (VCR) Inc., documenting our greenhouse gas management activities and achievements in 2000. It includes our continuing actions to reduce growth of GHG emissions by encouraging more efficient power production and customer use of electricity, investing in emissions offsets and sparking the advancement of alternative energy technologies.

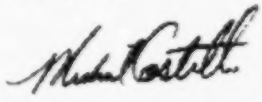
In December 2000, BC Hydro set an important goal. We want to become the leading sustainable energy company in North America. One way to do this is by building on the strengths of our hydro power energy base and ongoing GHG management.

BC Hydro's new sustainability framework reinforces our commitment to the extensive efforts already underway to limit growth of GHG emissions. For example, in 2000 we pledged to offset 50 per cent of the increase in GHG emissions from two new thermal generating plants being built to meet Vancouver Island's electricity needs.

We continue to set targets for GHG emission reductions and provide strong direction and support from senior management to reach these goals. We also continue to refine and strengthen our systems and programs to track and reduce GHG emissions. As well, internal processes are used to continually review and revise our strategy as needed.

BC Hydro will continue to provide VCR Inc. with regular documentation of our efforts to manage the growth of BC Hydro's GHG emissions.

Yours very truly,



Michael Costello
President and Chief Executive Officer

"Our new sustainability framework reinforces our commitment to the extensive efforts already underway to limit growth of GHG emissions."

Michael Costello
President and CEO

Managing greenhouse gases

Activities to limit the growth of GHG emissions

- ☑ Resource Smart
- ☑ Power Smart
- ☑ Clean energy
- ☑ Offsets
- ☑ Sustainability

BC Hydro's GHG emissions are currently among the lowest in the North American electricity industry. However, they are rising due to growth in electricity demand, and our decision to meet the majority of that growth through additional natural gas-fired capacity: a decision that balances environmental, social and economic considerations.

Our challenge is to limit the growth in GHG emissions from our system. BC Hydro is committed to this challenge and our climate change action plan outlines a multi-faceted approach to managing our GHG emissions. Measures are directed at BC Hydro's internal operations, our customers, green energy purchases, and GHG offsets at other locations.

Activities that support our climate change action plan

Stretching our resources—Maximizing energy output from our GHG-free hydro facilities reduces the amount of new thermal generation required to meet customer demand. Resource Smart, our internal efficiency program, improves the operational effectiveness of hydro generating plants across our system.

Helping customers save energy—Our Power Smart program of energy efficiency initiatives helps residential customers and businesses use energy wisely, stretching electricity resources among more users and lessening the need for additional power.

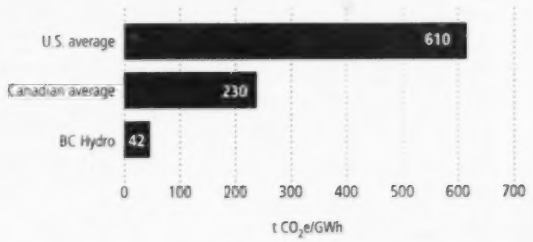
Choosing cleaner power—Generation with zero or minimal GHG emissions is important when adding to our mix of energy supply resources. Our current target is to meet at least 10 per cent of BC Hydro's new load growth with alternative, 'green energy' resources.

Offset investments—We are actively seeking opportunities to invest in projects that mitigate GHG emissions at our facilities by lowering or avoiding emissions at other sources. This year, we committed to purchasing roughly 5.5 million tonnes of GHG emission reductions to offset 50 per cent of the increase in emissions, through to 2010, at two new natural gas-fired generation facilities being constructed on Vancouver Island.

Promoting sustainability—In 2000, the principles of sustainability were formally ratified by BC Hydro's Board of Directors and senior executive as the driving force of our

Comparing GHG intensities

(a measure of GHG emissions per unit of electricity generated)



Power supplied by the BC Hydro system, which includes power purchases, has a very low GHG intensity. It is well below the Canadian and U.S. average GHG intensity values as shown.

Source: Canadian average – Canadian Electricity Association, 1999.
U.S. average – U.S. Department of Energy's Energy Information Agency, 1999.

business. We have developed a Sustainability Action Plan that aims to establish BC Hydro as a leading sustainable energy company in North America. We will accomplish this goal by building on the strengths of our hydro power energy base, embracing a strong conservation ethic, offsetting emissions from thermal generation, making a significant social contribution, encouraging employee innovation and continuing our strong financial performance.

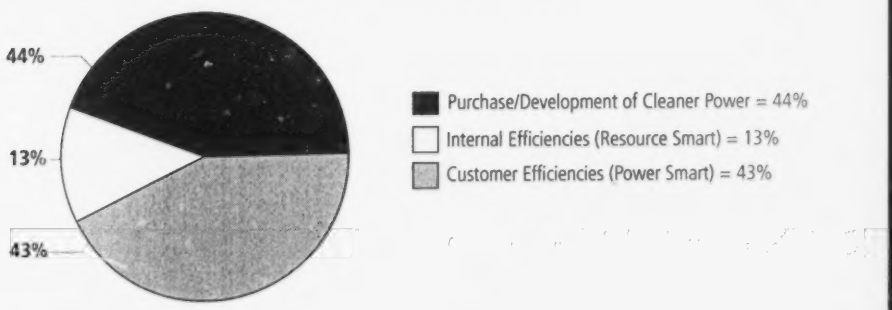
Setting targets—Targets for reducing our GHG emissions are established, revised and updated as part of BC Hydro's long-term resource planning and corporate strategy development processes. This year, we reached internal GHG emission reductions totalling 25.7 million tonnes for the period 1989-2000, or 99 per cent of our initial target of 26.0 million tonnes.

Looking forward, two new targets were set in 2000 to guide BC Hydro's GHG emission reduction activities over the next five years:

- From 2001 to 2005 we aim to reduce our GHG emissions by 13 million tonnes through internal activities. Savings will come from our Power Smart portfolio of customer energy efficiency programs, our Resource Smart internal efficiency initiative, and our commitment to acquire new green energy resources.
- We intend to contract 5.5 million tonnes of GHG emission reductions by 2005 from external offset projects, in order to fulfill our GHG offset commitment.

Reporting on our progress—BC Hydro provides open and full disclosure of our GHG management actions on behalf of GHG emission reductions. Our annual Greenhouse Gas Report outlines targets and initiatives to cut emissions, and records the progress made to meet our goals.

Breakdown of internal emission reductions (2000)



In 2000, most of our emission reductions came from purchasing and developing cleaner power, and from helping our customers save energy through our Power Smart programs. We purchased GHG-free power from hydro and woodwaste IPPs. We also installed a new natural gas fired plant in Fort Nelson displacing the more GHG-intensive power we used to import from Alberta to provide local service. We achieved the remaining 13 per cent of our emission reductions by improving the efficiency of our own facilities.

VCR recognition

BC Hydro's 1999 Climate Change Progress Report earned the "Gold Champion Level Reporter" status from the Voluntary Challenge and Registry (VCR) Inc., representing the highest level of achievement available to a climate change progress report assessed under VCR Inc.'s rigorous Champion Reporting System.

BC Hydro was also the only Canadian electric utility in 2000 to receive the VCR Inc. Leadership Award that recognizes us for our achievements in reducing GHG emissions, public outreach, investing in offsets and sequestration and overall leadership in GHG management.

business. We have developed a Sustainability Action Plan that aims to establish BC Hydro as a leading sustainable energy company in North America. We will accomplish this goal by building on the strengths of our hydro power energy base, embracing a strong conservation ethic, offsetting emissions from thermal generation, making a significant social contribution, encouraging employee innovation and continuing our strong financial performance.

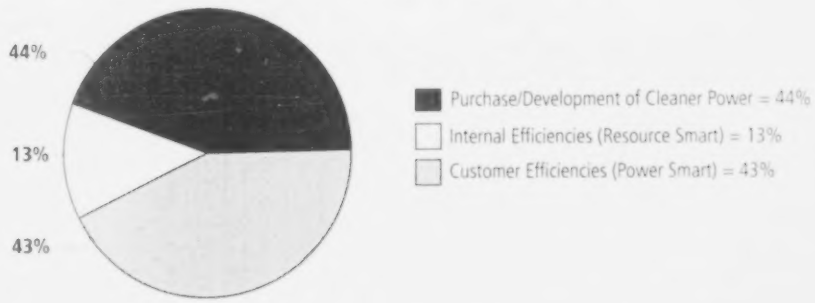
Setting targets—Targets for reducing our GHG emissions are established, revised and updated as part of BC Hydro's long-term resource planning and corporate strategy development processes. This year, we reached internal GHG emission reductions totalling 25.7 million tonnes for the period 1989-2000, or 99 per cent of our initial target of 26.0 million tonnes.

Looking forward, two new targets were set in 2000 to guide BC Hydro's GHG emission reduction activities over the next five years.

- From 2001 to 2005 we aim to reduce our GHG emissions by 13 million tonnes through internal activities. Savings will come from our Power Smart portfolio of customer energy efficiency programs, our Resource Smart internal efficiency initiative, and our commitment to acquire new green energy resources.
- We intend to contract 5.5 million tonnes of GHG emission reductions by 2005 from external offset projects, in order to fulfill our GHG offset commitment.

Reporting on our progress—BC Hydro provides open and full disclosure of our GHG management actions on behalf of GHG emission reductions. Our annual Greenhouse Gas Report outlines targets and initiatives to cut emissions, and records the progress made to meet our goals.

Breakdown of internal emission reductions (2000)



In 2000, most of our emission reductions came from purchasing and developing cleaner power and from helping our customers save energy through our Power Smart programs. We purchased GHG-free power from hydro and woodwaste IPPs. We also installed a new natural gas-fired plant in Fort Nelson displacing the more GHG-intensive power we used to import from Alberta to provide local service. We achieved the remaining 13 per cent of our emission reductions by improving the efficiency of our own facilities.

VCR recognition

BC Hydro's 1999 Climate Change Progress Report earned the "Gold Champion Level Reporter" status from the Voluntary Challenge and Registry (VCR) Inc., representing the highest level of achievement available to a climate change progress report assessed under VCR Inc.'s rigorous Champion Reporting System.

BC Hydro was also the only Canadian electric utility in 2000 to receive the VCR Inc. Leadership Award that recognizes us for our achievements in reducing GHG emissions, public outreach, investing in offsets and sequestration and overall leadership in GHG management.

Our GHG emissions

BC Hydro accounts for only one per cent of the GHGs emitted by Canada's electricity sector, and 0.2 per cent of Canada's total GHG emissions.

BC Hydro's GHG emission levels vary each year according to the proportion of GHG-free hydro power used to meet customer demand.

We generate, purchase and distribute electrical power to 1.5 million customers within British Columbia. Electricity produced at our own facilities makes up the majority of the power we supply to customers. The remainder is purchased from independent power producers (IPPs). Depending on supply, demand and market prices, we also trade power with Alberta and the United States.

In 2000, 92 per cent of the electricity supplied by the BC Hydro system was GHG-free power; 91 per cent from hydro electricity, and one per cent from woodwaste.

Direct and indirect sources of GHG emissions

Direct emissions—Most of our direct GHG emissions result from fossil fuel combustion at the three thermal facilities that augment BC Hydro's regular hydroelectricity production. A lesser amount results from small, diesel-generating stations supplying local power to B.C. communities not connected to our provincial supply grid. Generation from our fossil fuel sources accounted for 1.9 million tonnes of GHG in 2000, or 83 per cent of BC Hydro's total GHG emissions during the year. Direct emissions from non-power activities (motor vehicle use, heating our buildings, and SF_6 losses from transmission equipment) accounted for a further 116,000 tonnes, or five per cent of our GHG emissions.

Indirect emissions—Energy purchases from IPPs accounted for 282,000 tonnes of our GHG emissions in 2000, or the remaining 12 per cent of our total emissions.

Greenhouse gas emissions base year

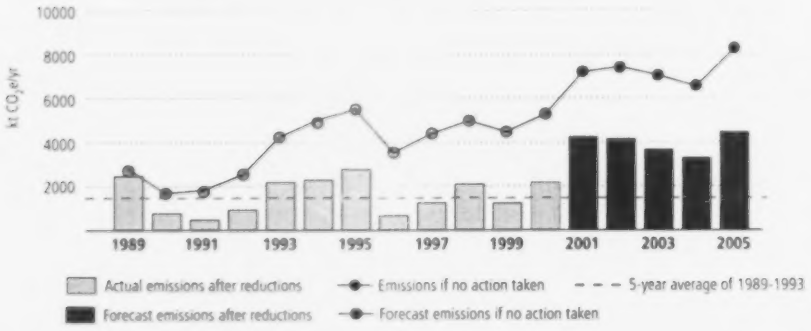
Actual Emissions for BC Hydro System	Unit	1989	1990	1991	1992	1993
GHG Emissions (as CO_2 equivalents)	kt	2,484	914	604	1,140	2,219
GHG Intensity	t/GW·h	55	19	12	22	47
Base Year BC Hydro System Emissions (1989 -1993 Average)	kt			1,472		
Base Year BC Hydro System GHG Intensity (1989 -1993 Average)	t/GW·h			31		

Emissions in a representative base year (usually 1990) are used as a reference point for measuring changes in emissions over time. BC Hydro's ongoing efforts to limit growth of GHG emissions are benchmarked against average emissions during the five-year span from 1989 through 1993. This five-year period is representative of typical GHG emissions in the early 1990s. The average 'smoothes out' fluctuations in the hydroelectricity portion of our energy supply caused by normal variations in water inflows to BC Hydro reservoirs. The average amount of annual emissions over the five-year period was 1.5 million tonnes. This number has been selected as BC Hydro's base level for GHG emission reductions.

The dominance of hydro power in our energy supply portfolio means BC Hydro is one of the North American electricity industry's lowest producers of GHGs. We account for only one per cent of the GHGs emitted by Canada's electricity sector, and 0.2 per cent of Canada's total GHG emissions. Our proportion of GHGs per unit of energy produced is also among the lowest on the continent, roughly 80 per cent lower than the Canadian average, and over 90 per cent lower than the U.S. average. (See chart on page 4.)

In the years ahead, growing demand for electricity in British Columbia is expected to increase both our total GHG emissions and the GHG-intensity of the power we produce. Greater demand for energy in B.C. will be largely met from natural gas, the cleanest-burning fossil fuel available to the electricity industry. Increased generation from natural gas sources including the Island Cogeneration Project in Campbell River and the proposed Port Alberni Generation Project in Port Alberni on Vancouver Island poses a significant challenge to our efforts to reduce the growth of BC Hydro's GHG emissions.

Total BC Hydro system emissions (1989 – 2005)



The bars above represent the actual emission for years 1989 through 2000 and projected from 2001 onward. They show considerable year-to-year variability reflecting the changes in water availability and fossil fuel generation. The line above the bars represent the level of emissions we would have reached if we had not taken action to reduce our emissions. (For exact GHG emission statistics, see Inventory on page 19).

BC Hydro's proportion of GHGs per unit of energy produced is also among the lowest on the continent, roughly 80 per cent lower than the Canadian average, and over 90 per cent lower than the U.S. average.

Stretching our resources

We are working to increase the efficiency of our generation activities. Squeezing more energy from BC Hydro's existing plants delays the need to develop additional generation to meet growing demand for power in B.C. We are improving the efficiency of our hydro power facilities to increase the amount of GHG-free energy available for customers, at the same time as we are boosting the performance of thermal plants to minimize GHG emissions.

Actions undertaken

Resource Smart—BC Hydro's internal Resource Smart program is designed to increase energy output by improving equipment efficiencies at our existing plants. Initiatives can include redeveloping entire power plants at older facilities, adding new generating units and upgrading turbine runners to boost annual energy output. For example, the addition of a fourth generating unit at the Seven Mile Dam will add 210 megawatts of generating capacity to our system. (See sidebar.)

Launched in 1987, Resource Smart has contributed cumulative annual energy gains of 578 GW·h a year to the end of 2000, along with 2.4 million tonnes in avoided GHG emissions since the start of the program. In 2000 alone, the program's efficiency improvements helped us avoid 307,000 tonnes of GHG emissions.

Burrard Generating Station—Work undertaken in the past decade to address the environmental performance and efficiency of power-producing equipment at Burrard Generating Station contributed to 9,500 tonnes in avoided GHG emissions in 2000. The gas-fired plant near Vancouver is BC Hydro's principal and most flexible source of thermal power. Improvements at Burrard have helped us avoid 31,000 tonnes of GHG emissions since equipment upgrading began in 1994.

Minimizing SF_6 losses—Sulphur hexafluoride (SF_6), a potent GHG used to insulate and protect transmission equipment, can escape from worn or leaking seals in high-voltage equipment or during routine handling. We have been working since 1997 to develop systems to improve SF_6 tracking and management, and to change our monitoring, installation and handling practices to reduce losses. We have also employed an infrared laser imaging camera to survey SF_6 equipment and pinpoint the exact location of SF_6 leaks so they can be repaired more effectively. Results of these and other efforts in 2000 included the first identification of our annual leakage rate, which was 3.4 per cent for the year. As well, repairs were undertaken on a number of circuit breakers, which should reduce leakage in future. We estimate that on-going improvements to our SF_6 management avoided 36,000 tonnes of GHG emissions in 2000.

Seven Mile Dam

ncreasing the generating capacity at BC Hydro's Seven Mile Dam and power plant near Trail is expected to contribute significant GHG emission reductions beginning in 2004.

The Resource Smart project involves installing a fourth generating unit at the plant to boost generating capacity by 210 megawatts (MW)

nd add 302 GW·h to BC Hydro's annual hydro power output.

The increased hydro production is expected to reduce GHG emissions by 170,000 tonnes annually.

The plant, located on the Pend d'Oreille River near Trail, was originally designed to house four generating units. Opened in 1979 with three turbines, it currently has a total generating capacity of 608 MW.

Installation of the fourth Seven Mile unit began in 2001 and will take about three years to complete.

Helping customers save energy

Promoting energy conservation benefits BC Hydro, our customers and the environment. Wise use of power extends our electricity resources, helps people and businesses stretch their energy dollars further, and minimizes the amount of thermal generation needed to augment production of GHG-free hydro power to meet overall demand for electricity.

We encourage saving energy through our Power Smart program, a portfolio of initiatives available to residential, commercial and industrial customers. For example, we help residential customers find ways to renovate or retrofit their homes to be more energy efficient, and we provide referrals to pre-registered contractors who perform to Power Smart standards. We also provide programs for commercial and industrial customers to audit their facilities and identify energy saving opportunities that will benefit their financial bottom line.

Annual savings achieved by Power Smart totalled approximately 2,300 GW·h in 2000, equivalent to 1.2 million tonnes in avoided GHG emissions. Since its inception in 1989, Power Smart has helped us avoid 9.8 million tonnes of GHG emissions.

Customers can do their part

Beginning in 2001, BC Hydro's customers can obtain more information about Power Smart education programs and incentives that can help them save energy dollars.

Our Home Energy Learning Program — or h.e.l.p. — provides our customers with access to a range of customized options to reduce electricity use. Its principal feature is a newly-developed interactive on-line tool called the Power Smart Home Energy Profile, which generates specific energy-saving suggestions from answers to a series

of detailed questions about a participant's own home and energy use. The program also incorporates the customer's energy history from BC Hydro's customer database. A paper version of the questionnaire is available for customers without Internet access.

Program participants are encouraged to act on the energy-saving measures outlined in their home profile. Information and incentives for energy-efficient products are available, along with referrals to other Power Smart programs for residential customers.

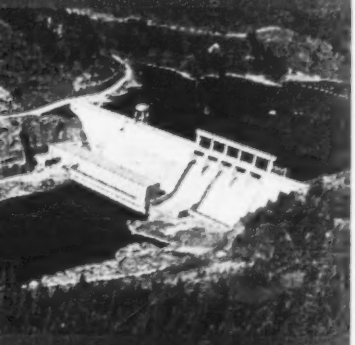
The on-line version of h.e.l.p. at ***www.bchydro.com*** also includes additional features like a calculator to compute energy consumption by various electrical appliances, and an Energy Library containing new material on residential energy-related topics.

Stretching our resources

Seven Mile Dam

Increasing the generating capacity at BC Hydro's Seven Mile Dam and power plant near Trail is expected to contribute significant GHG emission reductions beginning in 2004.

The Resource Smart project involves installing a fourth generating unit at the plant to boost generating capacity by 210 megawatts (MW)



and add 302 GW·h to BC Hydro's annual hydro power output.

The increased hydro production is expected to reduce GHG emissions by 170,000 tonnes annually.

The plant, located on the Pend d'Oreille River near Trail, was originally designed to house four generating units. Opened in 1979 with three turbines, it currently has a total generating capacity of 608 MW.

Installation of the fourth Seven Mile unit began in 2001 and will take about three years to complete.

We are working to increase the efficiency of our generation activities. Squeezing more energy from BC Hydro's existing plants delays the need to develop additional generation to meet growing demand for power in B.C. We are improving the efficiency of our hydro power facilities to increase the amount of GHG-free energy available for customers, at the same time as we are boosting the performance of thermal plants to minimize GHG emissions.

Actions undertaken

Resource Smart—BC Hydro's internal Resource Smart program is designed to increase energy output by improving equipment efficiencies at our existing plants. Initiatives can include redeveloping entire power plants at older facilities, adding new generating units and upgrading turbine runners to boost annual energy output. For example, the addition of a fourth generating unit at the Seven Mile Dam will add 210 megawatts of generating capacity to our system. (See sidebar.)

Launched in 1987, Resource Smart has contributed cumulative annual energy gains of 578 GW·h a year to the end of 2000, along with 2.4 million tonnes in avoided GHG emissions since the start of the program. In 2000 alone, the program's efficiency improvements helped us avoid 307,000 tonnes of GHG emissions.

Burrard Generating Station—Work undertaken in the past decade to address the environmental performance and efficiency of power-producing equipment at Burrard Generating Station contributed to 9,500 tonnes in avoided GHG emissions in 2000. The gas-fired plant near Vancouver is BC Hydro's principal and most flexible source of thermal power. Improvements at Burrard have helped us avoid 31,000 tonnes of GHG emissions since equipment upgrading began in 1994.

Minimizing SF_6 losses—Sulphur hexafluoride (SF_6), a potent GHG used to insulate and protect transmission equipment, can escape from worn or leaking seals in high-voltage equipment or during routine handling. We have been working since 1997 to develop systems to improve SF_6 tracking and management, and to change our monitoring, installation and handling practices to reduce losses. We have also employed an infrared laser imaging camera to survey SF_6 equipment and pinpoint the exact location of SF_6 leaks so they can be repaired more effectively. Results of these and other efforts in 2000 included the first identification of our annual leakage rate, which was 3.4 per cent for the year. As well, repairs were undertaken on a number of circuit breakers, which should reduce leakage in future. We estimate that on-going improvements to our SF_6 management avoided 36,000 tonnes of GHG emissions in 2000.

Helping customers save energy

Promoting energy conservation benefits BC Hydro, our customers and the environment. Wise use of power extends our electricity resources, helps people and businesses stretch their energy dollars further, and minimizes the amount of thermal generation needed to augment production of GHG-free hydro power to meet overall demand for electricity.

We encourage saving energy through our Power Smart program, a portfolio of initiatives available to residential, commercial and industrial customers. For example, we help residential customers find ways to renovate or retrofit their homes to be more energy efficient, and we provide referrals to pre-registered contractors who perform to Power Smart standards. We also provide programs for commercial and industrial customers to audit their facilities and identify energy saving opportunities that will benefit their financial bottom line.

Annual savings achieved by Power Smart totalled approximately 2,300 GW·h in 2000, equivalent to 1.2 million tonnes in avoided GHG emissions. Since its inception in 1989, Power Smart has helped us avoid 9.8 million tonnes of GHG emissions.

Customers can do their part

Beginning in 2001, BC Hydro's customers can obtain more information about Power Smart education programs and incentives that can help them save energy dollars.

Our Home Energy Learning Program — or h.e.l.p. — provides our customers with access to a range of customized options to reduce electricity use. Its principal feature is a newly-developed interactive on-line tool called the Power Smart Home Energy Profile, which generates specific energy-saving suggestions from answers to a series

of detailed questions about a participant's own home and energy use. The program also incorporates the customer's energy history from BC Hydro's customer database. A paper version of the questionnaire is available for customers without Internet access.

Program participants are encouraged to act on the energy-saving measures outlined in their home profile. Information and incentives for energy-efficient products are available, along with referrals to other Power Smart programs for residential customers.

The on-line version of h.e.l.p. at ***www.bchydro.com*** also includes additional features like a calculator to compute energy consumption by various electrical appliances, and an Energy Library containing new material on residential energy-related topics.

Choosing cleaner power

Progress on meeting our green energy target

BC Hydro is encouraging development of green energy resources to help serve B.C.'s growing demand for electricity.

In April 2000, we invited proposals from IPPs for new generation projects that meet our green energy criteria for renewable,

socially-responsible power with low environmental impact. Six months later, in October, we reached agreement with Miller Creek Power Limited to purchase output from a 25 megawatt run-of-the-river hydro plant the company will construct near Pemberton, B.C., by 2003.

The plant will provide approximately 100 GW·h of GHG-free electricity a year, enough to meet the annual needs of about 10,000 residential customers. The project will direct power to our provincial electricity grid, and provide significant economic benefits for the local community.

BC Hydro is committed to developing new generation with zero or minimal GHG emissions as part of our goal of deploying cleaner energy sources to meet growth in demand for electricity.

In 2000 we pledged to meet 10 per cent of new electricity demand with green energy. BC Hydro defines green energy as power that is renewable, has low environmental impact and is developed in a socially-responsible manner.

Our voluntary, 10 per cent target is expected to be met in the short term through purchase agreements with independent power producers (IPPs) who generate electricity using proven green technologies such as small hydro and woodwaste (biomass). We are also investigating near-commercial green technologies that have the potential to help us meet this goal in the longer term.

IPP purchases

A number of independent companies generate electricity for sale to BC Hydro, including several who produce their energy from clean energy sources—typically small hydro plants and woodwaste. We purchased 2,700 GW·h of electricity from these sources in 2000, thereby displacing fossil-fuel generation at our thermal plants, and avoiding 1.2 million tonnes in GHG emissions.

Developing green technologies

We are actively researching emerging wind, biomass and micro hydro technologies with the potential to contribute to our green energy portfolio. The status of these explorations includes:

- Our ongoing investigation of wind power potential continued in 2000 with establishment of five wind speed monitoring towers at promising locations in B.C., in order to assess the true size of the wind resource at each site, and the seasonal variability and consistency of the wind. We also completed a wind energy resources map of B.C. to help identify other sites for study. We are currently planning to site 10 additional wind monitors across B.C.
- We contributed funding to a study of the feasibility of using green energy sources to serve residents of the Nemiah Valley, a remote community not connected to our power grid. The study explores the potential for wind and micro hydro generation to displace the wood, propane and diesel fuel to heat and power the community.
- Preliminary study is underway on Vancouver Island to explore potential sources of green energy to serve the Island. Possible sources of renewable, low-impact and socially-responsible power include wind, small and micro hydro, biomass, pumped storage and wave energy. Early results are encouraging and have provided a solid base for more detailed assessments now underway.

Replacing diesel power

BC Hydro continues to replace diesel plants in remote areas of B.C. with cleaner, more efficient sources of electricity. In January 2001, we connected the community of Meziadin Lake to our provincial electricity grid, ending service to the area from private diesel generators. In Fort Nelson, where imports of coal-fired electricity from Alberta and local diesel generation was replaced by a new gas-fired facility opened in 1999, we avoided 76,000 tonnes of GHG emissions in 2000. In Dease Lake, diesel generation was replaced by two GW·h of cleaner power from a small hydroelectricity IPP, reducing GHG emissions for the year by about 1,000 tonnes.

GHG emission offsets

We have limited opportunities to slow the growth of emissions from our power generating system, which already ranks as one of the most GHG-efficient in North America. Realizing this, BC Hydro is looking well beyond our own operations to identify and develop opportunities to reduce future emissions growth.

Investments in offsets are a key part of our strategy to contribute to global reduction in GHG emissions. An offset is a project that compensates for emissions at one source by lowering, avoiding, or capturing and storing emissions at another location. Since climate change is a global phenomenon, an offset anywhere in the world can compensate for GHG emissions in B.C.

This year, BC Hydro pledged to offset 50 per cent of the increase in GHG emissions from two new gas-fired generating facilities on Vancouver Island through 2010. Our commitment includes offsetting 300,000 tonnes annually from the Island Cogeneration Project in Campbell River, scheduled to be in service in 2001, and 350,000 tonnes annually from the proposed Port Alberni Generation Project expected to be in service by 2004.

We committed to our first offset project in 1999. It involves purchasing up to 33,400 tonnes of GHG emission reductions over 14 years from capturing methane gas from the Port Mann Landfill in Surrey, B.C. and blending it for use as fuel for a nearby wallboard plant.

Storing carbon in our reservoirs

We continue our work to create wetlands in the drawdown zone at Upper Arrow Reservoir, south of Revelstoke, in order to reduce the incidence of dust storms and provide more wildlife habitat. Over time, the growth of plants and their root development and decay will increase the organic content of the soil, sequestering carbon in the wetland.

Exporting cleaner power

BC Hydro's electricity trade with neighbouring utilities in Alberta and the western U.S. has risen dramatically since 1996. Overall, our trade activities reduce GHG emissions, since our hydro power-dominated net exports displace thermally generated energy.

Proposals invited

In early 2001, BC Hydro issued a formal request for proposals to contract 5.5 million tonnes of GHG offsets in order to identify quality mitigation projects to help us meet our aggressive offsets target.

The request for proposals – available on our Web site – supports our plan to offset 50 per cent of the increase in GHG emissions from two new natural gas-fired electricity plants on Vancouver Island, and follows the success of our first offsets purchase agreement at the Port Mann landfill.

For more information please visit our Web site at *www.bchydro.com/environment*

Choosing cleaner power

Progress on meeting our green energy target

BC Hydro is encouraging development of green energy resources to help serve B.C.'s growing demand for electricity.

In April 2000, we invited proposals from IPPs for new generation projects that meet our green energy criteria for renewable,

socially-responsible power with low environmental impact. Six months later, in October, we reached agreement with Miller Creek Power Limited to purchase output from a 25 megawatt run-of-the-river hydro plant the company will construct near Pemberton, B.C., by 2003.

The plant will provide approximately 100 GW·h of GHG-free electricity a year, enough to meet the annual needs of about 10,000 residential customers. The project will direct power to our provincial electricity grid, and provide significant economic benefits for the local community.

BC Hydro is committed to developing new generation with zero or minimal GHG emissions as part of our goal of deploying cleaner energy sources to meet growth in demand for electricity.

In 2000 we pledged to meet 10 per cent of new electricity demand with green energy. BC Hydro defines green energy as power that is renewable, has low environmental impact and is developed in a socially-responsible manner.

Our voluntary, 10 per cent target is expected to be met in the short term through purchase agreements with independent power producers (IPPs) who generate electricity using proven green technologies such as small hydro and woodwaste (biomass). We are also investigating near-commercial green technologies that have the potential to help us meet this goal in the longer term.

IPP purchases

A number of independent companies generate electricity for sale to BC Hydro, including several who produce their energy from clean energy sources—typically small hydro plants and woodwaste. We purchased 2,700 GW·h of electricity from these sources in 2000, thereby displacing fossil-fuel generation at our thermal plants, and avoiding 1.2 million tonnes in GHG emissions.

Developing green technologies

We are actively researching emerging wind, biomass and micro hydro technologies with the potential to contribute to our green energy portfolio. The status of these explorations includes:

- Our ongoing investigation of wind power potential continued in 2000 with establishment of five wind speed monitoring towers at promising locations in B.C., in order to assess the true size of the wind resource at each site, and the seasonal variability and consistency of the wind. We also completed a wind energy resources map of B.C. to help identify other sites for study. We are currently planning to site 10 additional wind monitors across B.C.
- We contributed funding to a study of the feasibility of using green energy sources to serve residents of the Nemiah Valley, a remote community not connected to our power grid. The study explores the potential for wind and micro hydro generation to displace the wood, propane and diesel fuel to heat and power the community.
- Preliminary study is underway on Vancouver Island to explore potential sources of green energy to serve the Island. Possible sources of renewable, low-impact and socially-responsible power include wind, small and micro hydro, biomass, pumped storage and wave energy. Early results are encouraging and have provided a solid base for more detailed assessments now underway.

Replacing diesel power

BC Hydro continues to replace diesel plants in remote areas of B.C. with cleaner, more efficient sources of electricity. In January 2001, we connected the community of Meziadin Lake to our provincial electricity grid, ending service to the area from private diesel generators. In Fort Nelson, where imports of coal-fired electricity from Alberta and local diesel generation was replaced by a new gas-fired facility opened in 1999, we avoided 76,000 tonnes of GHG emissions in 2000. In Dease Lake, diesel generation was replaced by two GW·h of cleaner power from a small hydroelectricity IPP, reducing GHG emissions for the year by about 1,000 tonnes.

GHG emission offsets

We have limited opportunities to slow the growth of emissions from our power generating system, which already ranks as one of the most GHG-efficient in North America. Realizing this, BC Hydro is looking well beyond our own operations to identify and develop opportunities to reduce future emissions growth.

Investments in offsets are a key part of our strategy to contribute to global reduction in GHG emissions. An offset is a project that compensates for emissions at one source by lowering, avoiding, or capturing and storing emissions at another location. Since climate change is a global phenomenon, an offset anywhere in the world can compensate for GHG emissions in B.C.

This year, BC Hydro pledged to offset 50 per cent of the increase in GHG emissions from two new gas-fired generating facilities on Vancouver Island through 2010. Our commitment includes offsetting 300,000 tonnes annually from the Island Cogeneration Project in Campbell River, scheduled to be in service in 2001, and 350,000 tonnes annually from the proposed Port Alberni Generation Project expected to be in service by 2004.

We committed to our first offset project in 1999. It involves purchasing up to 33,400 tonnes of GHG emission reductions over 14 years from capturing methane gas from the Port Mann Landfill in Surrey, B.C. and blending it for use as fuel for a nearby wallboard plant.

Storing carbon in our reservoirs

We continue our work to create wetlands in the drawdown zone at Upper Arrow Reservoir, south of Revelstoke, in order to reduce the incidence of dust storms and provide more wildlife habitat. Over time, the growth of plants and their root development and decay will increase the organic content of the soil, sequestering carbon in the wetland.

Exporting cleaner power

BC Hydro's electricity trade with neighbouring utilities in Alberta and the western U.S. has risen dramatically since 1996. Overall, our trade activities reduce GHG emissions, since our hydro power-dominated net exports displace thermally generated energy.

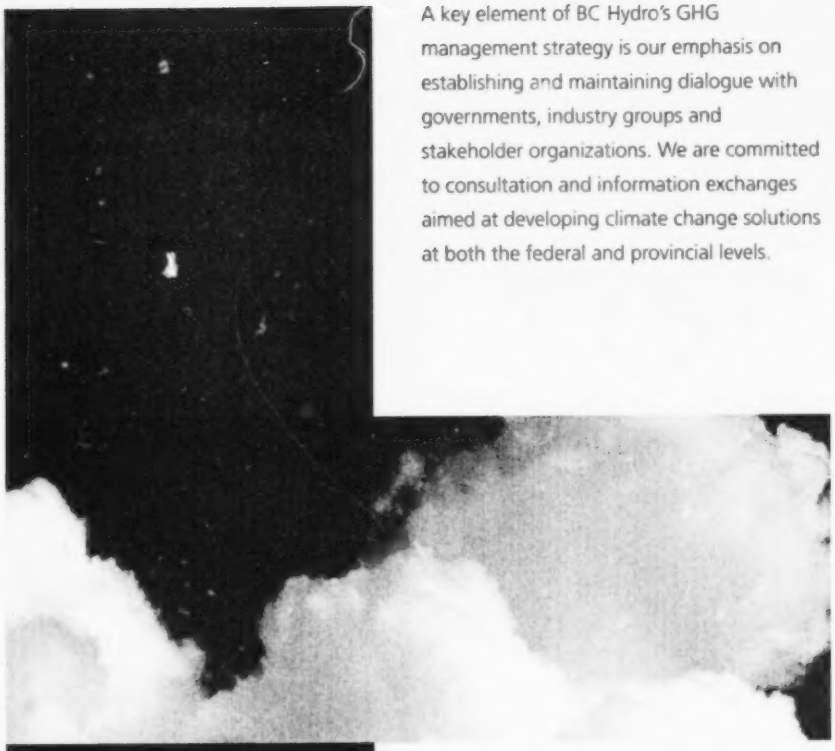
Proposals invited

In early 2001, BC Hydro issued a formal request for proposals to contract 5.5 million tonnes of GHG offsets in order to identify quality mitigation projects to help us meet our aggressive offsets target.

The request for proposals – available on our Web site – supports our plan to offset 50 per cent of the increase in GHG emissions from two new natural gas-fired electricity plants on Vancouver Island, and follows the success of our first offsets purchase agreement at the Port Mann landfill.

For more information please visit our Web site at ***www.bchydro.com/environment***

Policy development



BC Hydro continues to be actively involved in helping to shape Canada's climate change solutions on several fronts.

A key element of BC Hydro's GHG management strategy is our emphasis on establishing and maintaining dialogue with governments, industry groups and stakeholder organizations. We are committed to consultation and information exchanges aimed at developing climate change solutions at both the federal and provincial levels.

BC Hydro continues to be actively involved in helping to shape Canada's climate change solutions on several fronts, including:

- Working with the **Canadian Electricity Association (CEA)** and **Canadian Hydro power Association (CHA)** to develop climate change policy proposals for national and international consideration.
- Representing the CEA in the **Greenhouse Gas Emission Reduction Trading (GERT) pilot program**, a four-year multi-stakeholder process designed to examine emission reduction trading as a market-based mechanism to address the climate change challenge.
- Advising the B.C. government on climate change policy as a member of the **BC Greenhouse Gas Forum**, comprised of representatives from industry, labour, environmental groups, and provincial and local agencies.
- Providing input to the federal and provincial governments relating to specific measured being considered for implementation as part of **Canada's national climate change strategy**.

Communicating about climate change

Informing people about GHGs and climate change allows us to promote better awareness of ways Canadians can respond positively to concerns about global warming. We encourage regular, ongoing communication with a range of audiences interested in access to our library of information, including written publications, education kits for schools, and our Internet site. By sharing our material with customers, other interested citizens, students, BC Hydro employees, advocacy organizations and government agencies, we hope to build greater understanding of climate change, foster dialogues about solutions, and promote shared responsibilities for actions.

Informing the public

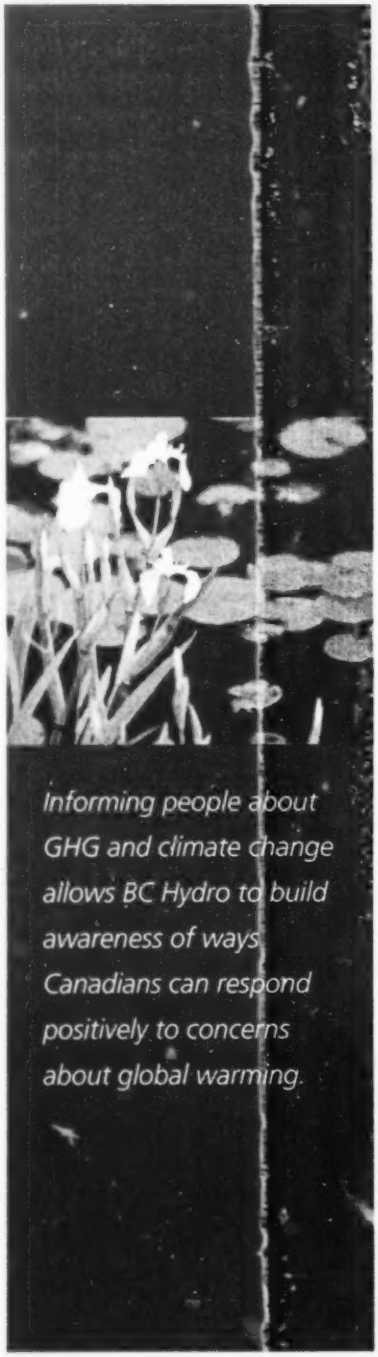
The material we produce regarding climate change and energy conservation is made available to the public at community events, through our Power Smart regional centres, and by requests through our Web site ***www.bchydro.com/environment***. Visitors to our web site can learn more about BC Hydro's commitment to limit our net contribution to climate change, read about our environmental performance in general, and access links to related information.

Specific information about our efforts to combat climate change is published in the **annual Greenhouse Gas report** submitted to the **Voluntary Challenge and Registry (VCR) Inc.** and in BC Hydro's **Annual and Triple Bottom Line reports** which profile our journey towards sustainability. It is also referenced in our annual report to the **CEA's Environmental Commitment and Responsibility program**, which records and measures our environmental performance in a number of areas, including climate change.

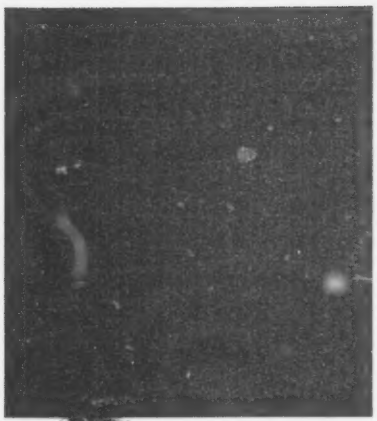
In 2000, we published an information booklet illuminating the rationale and options for developing alternative energy technologies to help meet growth in demand for electricity in B.C. The booklet, "**Powering Our Future**," discusses BC Hydro's energy resources, GHGs, green energy potential and how people can become involved in decisions about B.C.'s energy future.

Also in 2000, we invited the public to participate in a number of **focus group sessions** convened to explore BC Hydro's role and direction in providing power to British Columbians. Each of the sessions—held in August and September—included discussion of GHGs and the concept of emission offsets.

With the **Energy Council of Canada**, we continued to participate in the **Action by Canadians (ABC) program**, which aims to educate and motivate people to reduce their personal contributions to GHG emissions by altering their consumer and household behaviours. We provided in-kind support to the program in 2000, building on the financial contributions we offered a year earlier.



Informing people about GHG and climate change allows BC Hydro to build awareness of ways Canadians can respond positively to concerns about global warming.



BC Hydro encourages employees to use alternative forms of transportation when commuting to and from work.

Support for school programs

BC Hydro's Involvement in Education (IIE) program produces and distributes a range of energy-related resource materials for teachers and students throughout the province. In 2000, IIE developed its sixth early education module, **"Powering our Future: Green Energy Options"** for grades four to seven. The new module **focuses on alternative energy sources and energy efficiency**, and will be available to B.C. schools beginning in May, 2001.

BC Hydro is also working with the Pembina Institute for Appropriate Development to distribute a copy of the **Climate Change Awareness and Action education kit** to every pubic secondary school in British Columbia over the next two years. In 1999, we helped to fund the creation of the kit; in 2000, BC Hydro contributed to marketing the kit, including sponsoring a conference to introduce B.C. teachers to the material.

Promoting employee participation

We ensure employees are kept informed of GHG issues and actions through printed materials and web-based information.

We also encourage employees to use alternative forms of transportation when commuting to and from work, by sponsoring and promoting Bike to Work Week and Clean Air Day activities during Environment Week. We provide bicycle lockups, shower facilities and a bike buddy system for cyclists, as well as a service to match employees who wish to carpool.

In 2000, we introduced the Victoria Bus ProPass Program. It gives employees a 15 per cent discount on the retail price of a monthly pass for unlimited transit use in the Victoria area. A similar program is planned for Lower Mainland employees beginning later this year.

New educational resource materials for B.C. schools

Understanding our greenhouse gas inventory

This section describes how we arrived at the numbers in the highlighted rows in our GHG inventory on page 19.

Also included are the methods used to select our representative base year, to calculate our emissions by gas type, and to categorize our emission reductions.

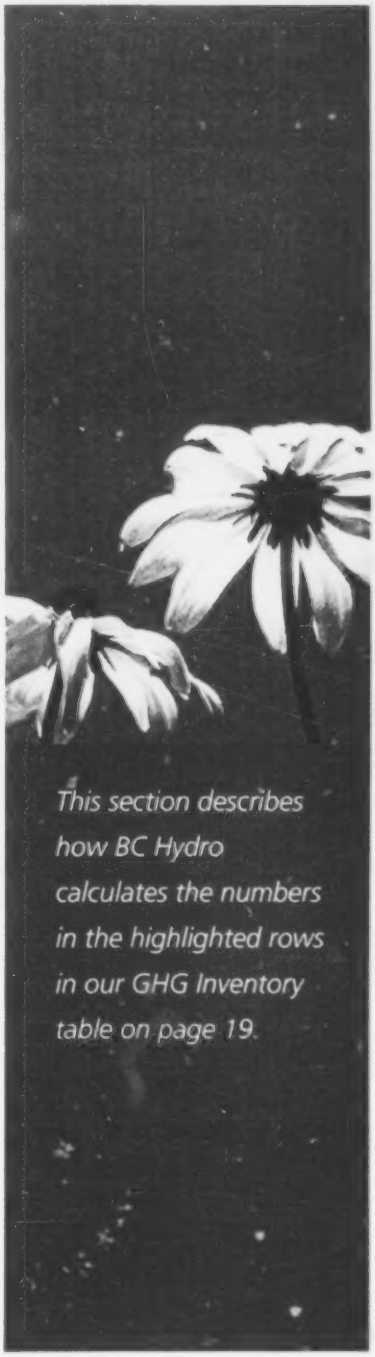
Emissions if no action taken
(Line A)

Figures along Line A project what BC Hydro's emissions would have been if we had taken no actions to reduce our emissions. That is, if our Power Smart and Resource Smart energy efficiency programs had not been implemented, and if we did not purchase low-GHG-intensity power, more power would have to have been generated at thermal generating plants, resulting in higher GHG emissions. The measure of this difference is calculated by adding our internal reductions (line B) to our actual emissions (line C) as described below.

Internal emission reductions
(Line B)

We calculate emission reductions from our Resource Smart internal efficiency initiatives, ongoing improvements at Burrard Generating Station, Power Smart customer efficiency programs, and purchases of low-GHG- intensity power by multiplying the amount of energy saved or generated (in GW·h) by an emission factor (in tonnes per GW·h). In choosing the emission factor, we assume the energy saved or generated through these initiatives displaces a low-efficiency gas-fired generation source somewhere in western North America. (Low efficiency gas-fired generating plants are typically the marginal resource in the western grid, while hydro, coal-fired and nuclear plants are typically operated as baseload resources.) At times, the displaced source would be BC Hydro's Burrard Generating Station; at others, it would be a gas-fired facility in Alberta or the western United States. Either way, we assume that it is either a single cycle gas turbine or a steam boiler that is 34 per cent efficient. Energy savings from Power Smart and Resource Smart, and energy supplied by GHG-free and GHG-neutral IPPs (e.g., hydro, woodwaste) avoid all the emissions from the gas-fired generation they displace. Energy supplied by IPPs operating high-efficiency gas-fired generation avoids the difference between high- and low-efficiency gas-fired generation.

The emission reductions arising from improvements to our SF_6 management are calculated differently. Each year, we subtract our actual SF_6 emissions from the level of SF_6 we were emitting in 1989. The difference is our estimate of the GHG emissions we avoid annually through SF_6 management.



This section describes how BC Hydro calculates the numbers in the highlighted rows in our GHG Inventory table on page 19.

Actual emissions for the BC Hydro system represent the sum of direct and indirect emissions.

Actual emissions (Line C)

Actual emissions for the BC Hydro system represent the sum of direct and indirect emissions.

BC Hydro system emissions = direct emissions + indirect emissions

Direct emissions result from BC Hydro's own power generation and internal operations (e.g., corporate motor vehicle use, office building space heating, loss of SF_6 from transmission equipment).

Indirect emissions are those associated with BC Hydro's purchases, for domestic use, of electricity generated with fossil fuels.

Direct emissions from ***fossil fuel combustion*** are calculated by multiplying generation (in GW·h) by an emission factor (in tonnes per GW·h). This method applies both to BC Hydro facilities and to electricity purchases. The choice of emission factor depends on the fuel being used and the efficiency of the operation. This facility-specific data is combined with Environment Canada emission factors for different fuels and for different greenhouse gases to calculate GHG emissions.

Direct emissions from ***motor vehicle use*** and ***gas consumption*** (for space heating) are calculated by multiplying the volume of fuel consumed by the appropriate emission factor provided by Environment Canada. Estimates of SF_6 direct emissions are based on annual leakage from electrical equipment. This year's inventory reflects an update of our estimate of current and historic levels of SF_6 emissions based on the results of a comprehensive SF_6 monitoring program implemented in 2000.

When calculating indirect emissions associated with BC Hydro's purchases of electricity from ***non-fossil fuel*** generating sources, ***hydro power*** is considered to be GHG neutral, and ***woodwaste combustion*** is considered to have very low GHG emissions. Based on Environment Canada emission factors, woodwaste-based power is attributed with a methane (CH_4) emission factor of 0.2 kg/GW·h (which equals 4.2 tonnes/GW·h).

Offsets (Line D)

Purchased emission reductions include all offsets generated at non-BC Hydro facilities and purchased by BC Hydro. To date, this includes emission reductions from the capture and combustion of methane at the Port Mann Landfill in Surrey, BC, as described on page 11.

Net emissions (Line E)

The numbers in Line E represent our net contribution of greenhouse gases to the atmosphere, which we calculate by subtracting our offsets (Line D) from our actual emissions (Line C).

Base year

Emissions in a representative base year (usually 1990) are used as a reference point for measuring changes in emissions over time, and for setting targets. The selection of a representative base year is not a straightforward decision for BC Hydro. BC Hydro

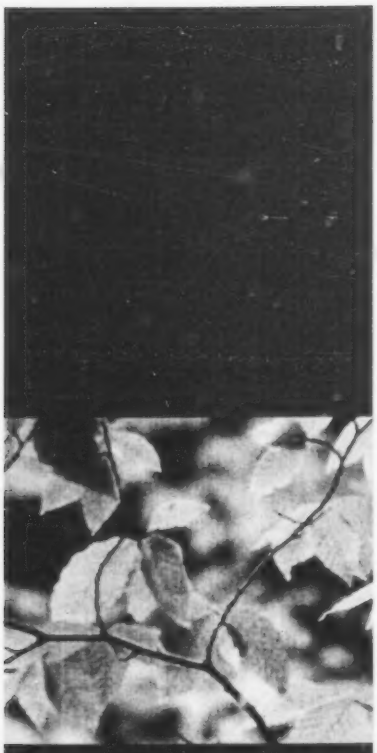
experienced a high water year in 1990, and hydroelectric facilities supplied 97 per cent of total generation, an unusually high percentage. As a result, GHG emissions for the BC Hydro system were low (909,000 tonnes) and not reflective of typical conditions at that time. For this reason, BC Hydro has adopted a representative base year emissions level of 1.5 million tonnes reflecting the five-year average of actual emissions for the period 1989 to 1993, which is more representative of typical operating conditions in 1990.

Base year: greenhouse gas emissions

Actual Emissions for BC Hydro System	**Unit**	**1989**	**1990**	**1991**	**1992**	**1993**
CO_2 Emissions	kt	2,342	783	477	1,011	2,090
CH_4 (as CO_2 equivalents)	kt	2	1	1	1	1
N_2O (as CO_2 equivalents)	kt	19	12	11	16	20
SF_6 (as CO_2 equivalents)	kt	121	118	115	112	108
GHG Emissions (as CO_2 equivalents)	kt	2,484	914	604	1,140	2,219
GHG Intensity	t/GW·h	55	19	12	22	46
Base Year BC Hydro System Emissions (1989-1993 Average)	**kt**			**1,472**		
Base Year BC Hydro System GHG Intensity (1989-1993 Average)	**t/GW·h**			**31**		

This table provides an inventory of actual GHG emissions by gas type for the total BC Hydro system for the years 1989 to 1993, including direct and indirect emissions. Also shown is the five-year average (1989-1993) of actual emissions and emission intensity, which BC Hydro uses as its base year.

BC Hydro has adopted a representative base year emissions level of 1.5 million tonnes reflecting the five-year average of actual emissions for the period 1989 to 1993.



All emissions and emission reductions in our inventory are reported in kilotonnes or thousands of tonnes of carbon dioxide equivalent (kt CO_2e).

Calculating emissions by gas type

All emissions and emission reductions in our inventory are reported in kilotonnes or thousands of tonnes of carbon dioxide equivalent (kt CO_2e) and represent the sum of all greenhouse gas emissions associated with each facility or activity. For example, at one of our thermal generation plants, greenhouse gases emitted include CO_2, CH_4 and N_2O. The amount of each greenhouse gas that we emit or avoid emitting on an annual basis is calculated by multiplying the amount of power generated or saved (GW·h) by the emission factors (tonnes or kilograms per GW·h) specific to each facility. These emission factors are based on Environment Canada emission factors for fuels, customized using BC Hydro data on the efficiency of specific facilities. Contributions of non-CO_2 greenhouse gases are then converted into tonnes of CO_2e using the latest global warming potentials published by the Intergovernmental Panel on Climate Change. In the case of SF_6, we simply multiply the amount of SF_6 that we estimate is leaked from our transmission facilities directly into the atmosphere by the appropriate global warming potential factor.

Categorizing our emission reductions

The difference between direct and indirect emissions was discussed earlier in this report (page 6) describing our actual emissions. Direct emissions are those from our own facilities and operations; indirect emissions are those associated with our power purchases.

A distinction must also be made between different categories of emission reductions: direct and indirect emission reductions, and sequestration. Direct emission reductions occur when efforts are made to reduce emissions at the source; for example, improving the efficiency of a thermal generation plant to reduce the amount of fossil fuel consumed (and the emissions produced) to generate each unit of electricity. Indirect emission reductions occur when efforts are made to reduce the amount of energy consumed, and therefore the amount of emissions produced; for example, when customer efficiency programs result in a lowered demand for power. Sequestration occurs when emissions produced at one source are captured and stored at another; for example, when carbon is sequestered by a forest or wetland. BC Hydro's internal emission reductions and offsets fall into the following categories listed below.

Categories of Emission Reductions

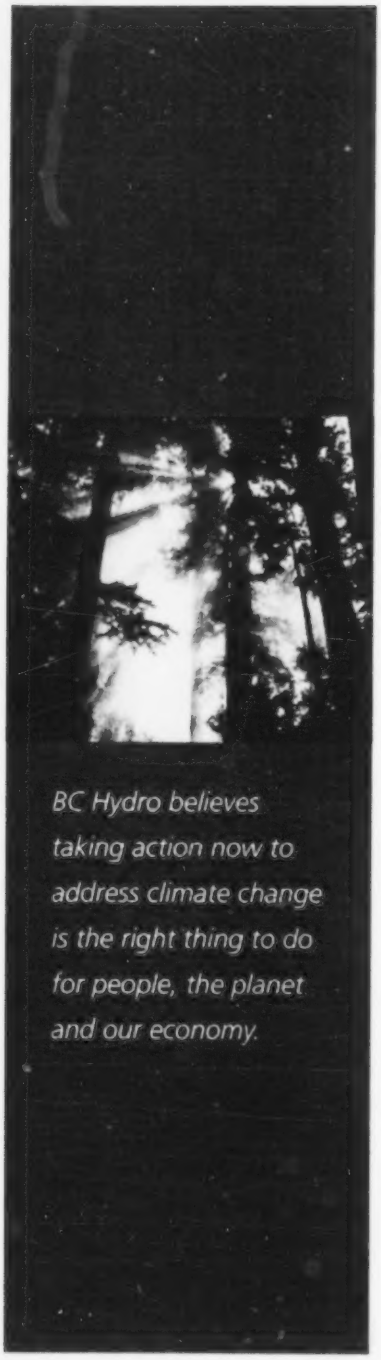
Direct reductions	Indirect reductions	Sequestration
Burrard Generating Station improvements	Customer efficiencies (Power Smart) Internal efficiencies (Resource Smart) Purchase & development of cleaner power Purchased emission reductions Net exports to U.S. and Alberta	Carbon sequestration at reservoirs

Greenhouse gas inventory (1989 – 2005)

		Actual												Forecast				
		1989	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	*2001*	*2002*	*2003*	*2004*	*2005*
Emissions If No Action Taken																		
BC Hydro facilities (direct)		2,732	1,733	1,814	2,505	4,005	3,997	3,989	3,143	3,970	3,997	4,068	4,153	*4,399*	*4,351*	*4,105*	*4,105*	*4,105*
Power purchases from non-BC Hydro facilities (indirect)		0	0	8	84	225	924	1,709	411	432	947	375	912	*2,742*	*2,862*	*2,919*	*2,739*	*4,033*
TOTAL EMISSIONS IF NO ACTION TAKEN	**A**	**2,732**	**1,733**	**1,821**	**2,589**	**4,230**	**4,921**	**5,697**	**3,554**	**4,402**	**4,944**	**4,443**	**5,065**	*7,141*	*7,213*	*7,023*	*6,844*	*8,138*
Internal Emission Reductions																		
Customer efficiencies (Power Smart)		34	118	316	514	727	902	1,034	1,193	1,297	1,246	1,226	1,200	*1,080*	*972*	*875*	*787*	*708*
Internal efficiencies (Resource Smart, Burrard, SF_6)		11	115	149	172	186	208	238	262	267	302	344	352	*394*	*487*	*550*	*773*	*801*
Purchase / development of low GHG intensity power		203	587	752	763	1,098	1,552	1,640	1,245	1,570	1,369	1,485	1,237	*1,386*	*1,489*	*1,866*	*1,962*	*2,104*
TOTAL INTERNAL EMISSION REDUCTIONS	**B**	**248**	**820**	**1,217**	**1,449**	**2,011**	**2,661**	**2,912**	**2,700**	**3,134**	**2,917**	**3,055**	**2,789**	*2,860*	*2,948*	*3,291*	*3,523*	*3,613*
Cumulative Internal Emission Reductions		248	1,067	2,284	3,733	5,744	8,405	11,317	14,017	17,151	20,067	23,123	25,912	*28,771*	*31,720*	*35,010*	*38,533*	*42,147*
Actual Emissions																		
BC Hydro facilities (direct)		2,484	914	596	1,056	2,073	1,900	2,398	443	842	1,634	1,058	1,995	*3,447*	*3,307*	*2,725*	*2,313*	*2,791*
Power purchases from non-BC Hydro facilities (indirect)		0	0	8	84	146	360	387	411	426	393	329	282	*835*	*957*	*1,007*	*1,007*	*1,733*
TOTAL ACTUAL EMISSIONS	**C = A - B**	**2,484**	**914**	**604**	**1,140**	**2,219**	**2,260**	**2,785**	**854**	**1,268**	**2,027**	**1,387**	**2,276**	*4,282*	*4,264*	*3,733*	*3,321*	*4,524*
Actual GHG Intensity (t/GW·h)		55	19	12	22	47	46	61	15	23	37	26	42	*76*	*73*	*65*	*58*	*74*
Actual Emissions in Representative Base Year (1989-1993 Average)				**1,472**														
PURCHASED OFFSETS	**D**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	*2*	*50*	*150*	*300*	*600*
NET EMISSIONS AFTER OFFSETS	**E = C - D**	**2,484**	**914**	**604**	**1,140**	**2,219**	**2,260**	**2,785**	**854**	**1,268**	**2,027**	**1,387**	**2,274**	*4,280*	*4,214*	*3,583*	*3,021*	*3,924*
Net GHG Intensity (t/GW·h)		55	19	12	22	47	46	61	15	23	37	26	42	*76*	*72*	*62*	*53*	*64*

Note: All amounts shown in thousands (000's) of tonnes of carbon dioxide equivalent (kt CO_2e) unless otherwise indicated.

Glossary



BC Hydro believes taking action now to address climate change is the right thing to do for people, the planet and our economy.

capacity: maximum sustainable amount of power that can be produced or carried at any instant

carbon dioxide equivalent (CO_2e): standard measure for GHG emissions, expressing the global warming potential of various gases over 100 years in terms of carbon dioxide equivalents; i.e., one tonne of methane has 21 times the atmospheric impact of one tonne of CO_2 and is expressed as 21 CO_2e; nitrous oxide (N_20) is 310, and SF_6 is 23,900

cogeneration: simultaneous production of electricity and useful steam from a single fuel source

greenhouse gas (GHG): gases which trap heat in the atmosphere; arising mainly from combustion of fossil fuels, they include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (NO_2) and chlorofluorocarbons (CFCs)

GHG intensity: a measure of the amount of emissions released during the generation of a given amount of energy; usually measured in tonnes of CO_2e per GW·h

GHG offset: project that compensates for GHG emissions from one source by lowering, avoiding, or sequestering (capturing and storing) emissions at another source

gigawatt-hour (GW·h): one billion units of electric power, supplied or produced for one hour; BC Hydro measures the output of a generating station in GW·h

hydroelectricity: electricity produced by harnessing the power of falling water or streamflow

independent power producer (IPP): operator of a privately-owned electricity generating facility which is usually connected to a utility's transmission system to sell electricity

inflow: water flowing into a reservoir

kilotonne (kt): 1,000 metric tonnes

sulphur hexafluoride (SF_6): a greenhouse gas that is used as an insulating and protective gas in transmission equipment

turbine: rotary device turned by the movement of gases, steam, water or wind

thermal generation: generation of electricity by converting heat energy into electric energy; generation through burning of fossil fuel or biomass (e.g. woodwaste)

Voluntary Challenge and Registry (VCR) Inc.: a non-government organization that encourages Canadian companies to voluntarily reduce GHG emissions and report on their progress

For more information, please contact

BC Hydro
Corporate Sustainability Group
333 Dunsmuir Street, 10th Floor
Vancouver, BC V6B 5R3

T: 604-623-4391 • F: 604-623-4335

e-mail: sustainability@bchydro.com

This report may also be viewed on the Internet, at

www.bchydro.com/environment/reports/greenhouse.html

Check out related reports and much more on BC Hydro's environmental Web site at:

www.bchydro.com/environment

The Greenhouse Gas Report was printed on BC-made, acid-free paper and contains 50% recycled fibre and 20% post-consumer waste.

THE POWER IS YOURS

BC hydro

PRINTED IN BRITISH COLUMBIA
A01-283 June 2001